NOTES ON SOME NORTH AMERICAN SPECIES OF HALICTUS WITH THE DESCRIPTION OF AN APPARENTLY NEW SPECIES (HYMENOPTERA: APOIDEA).

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This paper gives synonymical notes on two species of *Halictus* previously considered to be limited to the Palearctic fauna; the description of an apparently new species, in order that the name may be available for use in economic entomological literature; and a key for separating these from other closely related species occurring in the eastern part of the United States and Canada.

Halictus leucozonius (Schrank).

Apis leucozonia Schrank, Enum. Ins. Austr., 1781, p. 406, n. 819.
Halictus similis F. Smith, Cat. Hym. Brit. Mus., pt. 1, 1853, p. 69, n. 105.
Halictus similis Cockerell, Can. Ent., vol. 41, 1909, pp. 334–335.

When Frederick Smith described *Halictus similis* from Hudson's Bay, North America, he compared it with *H. leucozonius* but considered it to be distinct. In 1909, however, Cockerell saw the type of *similis* in the British Museum and considered it synonymous with *leucozonius*. A careful study by the writer of a series of specimens from both Europe and North America has confirmed the synonymy. Recently further confirmation has been received from Mr. P. Bluthgen, who writes that at his request Mr. R. B. Benson of the British Museum compared the type of *similis* with specimens of *leucozonius* and could find no difference between them. Since the species has apparently been previously known in America only from the type material seen by Smith, it was of especial interest to receive for identification a large series of specimens from Nova Scotia, where it is reported to be very abundant.

Halictus zonulus, Smith

Halictus zonulus Smith, Zoologist, vol. 6, 1848, p. 2171, n. 22.
Halictus similis Lovell, Can. Ent., vol. 37, 1905, p. 299 (new synonymy).
Halictus craterus Lovell, Psyche, vol. 15, 1908, p. 35 (new synonymy).

A specimen of *Halictus zonulus* from Europe was recently received from Mr. Bluthgen, with the notation that it occurs in Canada. It was recognized to be the same as the species known in North America as *craterus* Lovell. It occurs in eastern Canada and in the northeastern part of the United States as far west as Michigan.

Halictus athabascensis, new species.

Male, holotype.—Length 8 to 9 mm. Black, with the apical half of the clypeus pale yellow; tegula brown; tarsi and under side of flagellum brown testaceous.

Pubescence white, except for some fuscous hair on the abdominal tergites and yellowish hair on the tarsi.

Head without particular modification; distance between the anterior ocellus and the apical margin of the clypeus to that between the eyes just before the anterior ocellus as 6.25 to 4.75. Space between the inner margins of the eyes at the base of the clypeus and just before the anterior ocellus about the same width. Vertex and sides of face densely clothed with pubescence; clypeus and postclypeus nearly bare. Front uniformly covered with fine contiguous punctures. Vertex shining between finer but more widely separated punctures. Clypeus flat, nearly impunctate, apical margin truncate; postclypeus shining between small, widely separated punctures. Labrum nearly impunctate, basally depressed in the middle; apical margin subtruncate, fringed with long straight hairs. Temples broadest just below the middle of the eye, then narrowing abruptly to the base of the mandible, lower three-fourths punctate-striate; postgenae along the hypostomal carinae microscopically longitudinally striate, basally produced slightly below the level of the hypostomal carinae; genae reduced to a mere line. Mandibles reddish in the middle, when closed the tip of one reaching to the anterior-lateral angle of the clypeus on the opposite side. Joints of flagellum weakly moniliform beneath, of uniform length; third antennal joint nearly twice as long as second and about two-thirds as long as fourth.

Thorax with moderately dense erect pubescence. Prothorax without particular modification. Mesoscutum shining; the punctures of moderate size, on the anterior portion and laterad of the parapsidal furrows separated by a little more than the diameter of a puncture, between the furrows by about twice; mesopleura shining, finely and irregularly foveolate, indistinctly punctured; mesoscutellum polished, with a median longitudinal impressed line, the punctures smaller and more widely separated than on the mesoscutum, two lateral spots nearly impunctate. Metatergum and metapleura irregularly foveolate, indistinctly punctured. Propodeum shining, dorsal surface with a subcrescentic disk which is bordered posteriorly by a polished strip, very irregularly carinate; lateral and posterior surfaces finely and irregularly carinate-punctate; carinae on posterior-lateral angles weakly developed on lower fourth only. Wings yellowish hyaline, faintly iridescent. Stigma and wing-veins brown testaceous. Tegula brown, anteriorly testaceous, largely impunctate. Legs normal, tibial spurs testaceous.

Abdominal tergites purplish black, the apical margins brownish, finely and uniformly punctured; basal hair bands well developed; shining pygidial area of seventh tergite flat, lower margin rounded. Sternites unmodified; second with erect pubescence; third, fourth, and base of fifth with pubescence in the middle erect, at the sides longer and bending laterally; apices of fifth and sixth with ordinary pubescence; sixth with a median longitudinal streak and apical margin impunctate; seventh at the base wider than the eighth, its median process broader than that of the eighth.

Female, allotype.—Very similar to the male in color, sculpturing, and pubescence, but differing in the usual sexual characters. Length 9 to 10 mm. Black, without pale markings; legs brownish, tibiae and tarsi brown-testaceous; tibial spurs testaceous, lower edge of the hind spur serrate with broadly rounded teeth. Head ordinary; distance between anterior ocellus and apical margin of clypeus

to that between the eyes before the anterior ocellus as 7 to 5.5; face more sparsely pubescent, the sides more sparsely punctured; clypeus and postclypeus microscopically tessellate, with large shallow well separated punctures; postgenae very finely longitudinally striate along the hypostomal carinae. Thorax more robust; mesoscutum duller, more closely punctured. Abdomen more robust, tergites duller, more strongly purplish; hair apicad of basal hair bands largely black.

Type.—Cat. No. 44882, U. S. National Museum.

Locality of type, 70 miles up Athabasca River, Alberta, Canada; of allotype, Toronto, Ontario.

Described from the following: Type and 18 males, 70 miles up Athabasca River, Alberta, August 5, 1903 (Merritt Cary); 1 male, Carlisle, Pennsylvania, July 26, 1918 (Robert Fouts); 1 male, St. John, New Brunswick, Oct. 3 (A. G. Leavitt); 1 female, allotype, Toronto, Ontario, April 15, 1892 (Wm. Brodie); 3 females, Lehigh Gap, Pennsylvania, June 26, 1901; 1 female, North Cumberland, Pennsylvania, May 23, 1908, No. 192a (P. R. Myers); 2 females, Pequaming, Michigan, July 2 and 13, 1903 (Morgan Hebard); 1 female, Detroit, Michigan; 1 female and 1 male, Durham, New Hampshire (Weed and Fiske); 1 female, Canada, No. 2416 (C. F. Baker); 1 male, Hazelton, British Columbia, Sept. 6, 1919 (H. G. Dyar); from Kaslo British Columbia, all collected in 1903—1 female, June 26, and 1 without date (R. P. Currie), 1 female, May 30 (H. G. Dyar), and 1 female, July 7 (J. W. Cockle). All the specimens listed above are in the collection of the U. S. National Museum. Those below are in the Canadian National Collection: 1 male, Truro, Nova Scotia, Aug. 14, 1917; 1 female, Kings County, Nova Scotia, May 20, 1931, on *Pyrus malus* (C. E. Atwood); 1 female, Hunts County, Nova Scotia, June 16, 1931, on *Cornus stolonifera* (C. E. Atwood).

The following key will help to separate this species from related species known to occur in the eastern part of the United States and Canada:

1. Abdominal tergites dull, purplish black, very finely and uniformly punctured, the apical margins not at all depressed; basal hair bands creamy white, the hairs more closely appressed and seldom rubbed off to any extent. Dorsal surface of propodeum rather dull, its median length equal to that of mesoscutellum, finely and irregularly carinate, the carinae weaker apically, without a well-defined enclosed area. Male—posterior-lateral angles of seventh tergite ordinary; sixth sternite not modified, with usual pubesence; seventh with a well-developed median process; eighth with the process somewhat pointed and more triangular. Claspers of genitalia with a ventral lobe-like process. Lower half of clypeus usually largely yellow, in the middle extending to the apical margin. (These species would go into the subgenus *Curtisapis* of Robertson.) ..... 2.

– Abdominal tergites shining black, more coarsely and irregularly punctured, apical margins depressed, more conspicuously so laterally; basal hair bands white, the hairs looser and more frequently partly rubbed off. Dorsal surface of propodeum shining, its median length about equal to that of metatergum, with a well-defined enclosed area which has more regular longitudinal carinae uniformly developed to the apex. Male—posterior-lateral angles of seventh tergite produced and reflexed; sixth sternite modified, with unusual pubescence; seventh with a very small median projection; that of the eighth broad and nearly quadrate. Claspers of genitalia without a ventral process. Lower half of clypeus with a yellow spot which nowhere reaches entirely to the apical margin ..... 5.

2. Anterior-lateral angles of pronotum strongly developed and sharply right-angled; mesoscutum with punctures clearly defined and uniform in size, anteriorly slightly bigibbous in the middle. Posterior-lateral angles of propodeum carinate up to the truncate posterior margin of the dorsal surface; the disk bordered posteriorly by a very low carina. Wings yellowish infumate, more conspicuously so in the female. Pubescence of head and thorax white. Male—temples gradually narrowed below and receding posteriorly; mandibles ordinary; posterior margin of fifth sternite broadly emarginate in the middle; sternites 2 to 4 without polished apical margins, densely clothed with posteriorly recumbent hairs; clypeus convex, dull, microscopically tessellate, strongly punctured; labrum not impressed in the middle; third joint of antenna twice as long as second ..... *fuscipennis* Smith.

– Anterior-lateral angles of pronotum not strongly developed, obtusely angled; mesoscutum anteriorly not bigibbous, the punctures less distinctly defined and varying in size. Posterior-lateral angles of propodeum carinate on lower half only; apical margin of dorsal surface rounded; the disk not bordered posteriorly by a carina. Wings yellowish hyaline. Pubescence of head and thorax yellowish. Male—temples broader below and not receding posteriorly; mandibles unusually long; posterior margin of fifth sternite truncate; sternites 2 to 4 with polished apical margins, the pubescence sparser and nearly erect; clypeus shining, flat, sparsely and finely punctured; labrum basally impressed in the middle; third joint of antenna one and one-half times as long as second ..... 3.

3. Mesoscutum anteriorly not at all declivous, elevated only very slightly above the pronotum. Disk of propodeum carinate on the basal third only, apically polished in the male, dull with microscopic tessellations in the female. Male—mandibles very long, the tip of one reaching over beyond the base of the other; polished pygidial area of seventh tergite transversely concave, the apical margin subtruncate; head subquadrate, inner margins of eyes not converging below; hypostomal carinae narrow basally, but becoming wider apically and bending laterally with a strongly rounded curve; vertex posteriorly elevated; labrum weakly impressed in the middle ..... *coriaceus* Smith.

– Mesoscutum anteriorly abruptly declivous in the middle and elevated distinctly above the pronotum. Disk of propodeum carinate on at least the basal three-fourths, although the carinae are stronger basally. Male—mandibles varying in length, but never with the tip of one reaching the base of the other; polished pygidial area of seventh abdominal tergite not concave, the apical margin strongly rounded and sometimes weakly pointed in the middle; head somewhat narrowed below; hypostomal carinae of uniform width, bending laterally with a slightly rounded angle; vertex posteriorly not elevated; labrum distinctly impressed in the middle..... 4.

4. Hair on abdominal tergites apicad of basal bands largely pale. Female—postgenae along the hypostomal carinae polished; posterior margin of dorsal surface of propodeum slightly elevated, the disk more dull and microscopically tessellate between carinae; clypeus and postclypeus polished between punctures. Male—tip of mandible reaching about half way between anterior-lateral angles of clypeus and base of other mandible; tarsi yellow; third joint of antenna as dark as second; flagellum scarcely paler beneath; hair on third and fourth abdominal sternites longest in the middle; ventral surface of postgenae basally produced down below the hypostomal carinae..... *forbesii* Robertson.

– Hair on abdominal tergites apicad of basal bands largely fuscous. Female—postgenae along the hypostomal carinae longitudinally striate; posterior margin of dorsal surface of propodeum not elevated, the disk more shining; clypeus and postclypeus microscopically tessellate between punctures. Male—tip of mandible reaching to anterior-lateral angle of clypeus; tarsi dark brown; third joint of antenna much paler than second, color of those distad; flagellum much paler beneath; hairs on third and fourth sternites longest at the sides and bending over laterally; ventral surface of postgenae basally about level with the hypostomal carinae. *athabascensis* Sandhouse.

5. Anterior-lateral angle of pronotum forming a right angle. First abdominal tergite very sparsely punctured in the middle. Posterior-lateral angles of propodeum with carinae extending up to dorsal surface and for a short distance along its posterior margin; disk posteriorly rounded in the middle. Vertex behind postocellar line punctate, not striate. Wings strongly yellowish; stigma and nervures testaceous. Male—legs dark brown; posterior-lateral angles of seventh tergite produced beyond the middle so that the posterior margin is emarginate in the middle; sixth sternite laterally impunctate, medially with a basal tuft of erect hairs, and just beyond this a longitudinal row of hairs which is expanded laterally at the apex; apical margin of fifth sternite broadly emarginate in the middle..... *zonulus* Smith.

– Anterior-lateral angle of pronotum obtuse. First abdominal tergite quite uniformly punctured. Carina on posterior-lateral angle of propodeum becoming obsolescent at the posterior margin of the dorsal surface; disk posteriorly somewhat pointed in the middle. Vertex behind the postocellar line finely transversely striate. Wings

clear hyaline; stigma and nervures brown, paler basally. Male—legs with small spots at bases of front and middle tibiae, a larger spot at base of hind tibia, the middle and hind metatarsi (except the extreme apices) pale yellow; posterior-lateral angles of seventh tergite not produced beyond the middle of the posterior margin, so that the margin is truncate; sixth sternite with a broad triangular slightly depressed area at the apex, the lateral margins of which are fringed with several rows of rather long plumose hairs; apical margin of fifth sternite truncate ..... *leucozonius* (Schrank).

MINUTES OF THE 446TH REGULAR MEETING OF THE WASHINGTON ENTOMOLOGICAL SOCIETY, APRIL 6, 1933.

The 446th regular meeting of the Washington Entomological Society was held at 8 P. M., Thursday, April 6, 1933, in Room 43 of the new building of the National Museum. Mr. C. T. Greene, president, presided. There were present 45 members and 20 visitors. The minutes of the previous meeting were read and approved.

In reporting on the recent meeting of the executive committee, Mr. Rohwer stated that the Society's current funds were tied up in a closed bank, and that greetings for the centenary of the London Entomological Society were being prepared.

Major G. C. H. Franklin, of the Army Medical School, was unanimously elected to membership on recommendation of the executive committee.

Dr. W. F. Jepson of the Imperial Bureau of Entomology, upon invitation, greeted the society.

Under the heading "Notes and Exhibition of Specimens," Doctor Fracker showed specimens of fleas sold in curio stores in Mexico, dressed in imitations of human costumes. This note was discussed by Bishopp.

Dr. Aldrich read notices of the coming meetings of the Centenary of the Entomological Society of London, which gave an idea of the program.

The first communication on the regular program was by Major G. C. H. Franklin, and was entitled "The London school of hygiene and tropical medicine, with special reference to the department of entomology."

The paper presented a brief history of the school from the time of its foundation in 1899 to the present; a description of the present buildings opened in 1929; the purpose of the school and the reasons for its location in London. Mention was made of the excellent entomological and helminthological exhibits in the museum, and of the wealth of material for study and experimental work. The work of Doctors Buxton and Wigglesworth of the Division of Entomology in insect physiology was discussed. A recent address by the former, title, "The Effect of Climatic Conditions upon Populations of Insects," formed the basis for a discussion on the value of the study of insect physiology from the view point of medicine and agriculture. Dr. Buxton believes that the field worker should collect more critical data in the places where insects actually live. The laboratory could then check this data and from it develop by experiment, methods which would lead to a better control of insect pests. A partial list of the work already accomplished by these insect physiologists is given. A brief account of the Division of Helminthology at the school, and some of the work they are doing under the direction of Prof. Leiper, was given. The paper concluded with the hope that the vast collection of entomological and parasitological material available in Washington would some day be put to use in the teaching of post-graduate students. (Author's abstract.)

This paper was discussed by Howard, Bishopp, and Snodgrass.

The second communication was by Mr. D. L. Van Dine and was entitled "The relation of sugar-cane varieties to the problem of insect transmission of sugar-cane mosaic in Cuba."